MARCH 23, 2016
THE REHABILITATION OF THE SALT SHEDS
FEDERAL AID PROJECT NO. N/A
STATE PROJECT NO. 0171-0397
TOWNS OF BOLTON, EAST WINDSOR, MIDDLETOWN, AND WOLCOTT

ADDENDUM NO. 1

SPECIAL PROVISIONS

NEW SPECIAL PROVISION

The following Special Provision is hereby added to the Contract:

- SECTION 1.03 – AWARD AND EXECUTION OF CONTRACT

REVISED SPECIAL PROVISIONS

The following Special Provisions are hereby deleted in their entirety and replaced with the attached like-named Special Provisions:

- CONTRACT TIME AND LIQUIDATED DAMAGES
- SECTION 1.20 – GENERAL CLAUSES FOR FACILITIES CONSTRUCTION
- ITEM #0020765A – GUANO ABATEMENT

The following CSI Special Provision is hereby deleted its entirety and replaced with the attached like-named Special Provision:

- SECTION 075419 - POLYVINYL-CHLORIDE (PVC) ROOFING

CONTRACT ITEM
REVISED CONTRACT ITEM

ITEM NO.	DESCRIPTION	ORIGINAL QUANTITY	REVISED QUANTITY
0969070A	CONSTRUCTION FIELD OFFICE FURNISHINGS AND EQUIPMENT	8 MONTHS	16 MONTHS

The Bid Proposal Form has been revised to reflect these changes.

The number of calendar days has been revised in this Addendum.

The foregoing is hereby made a part of the contract.

SECTION 1.03 - AWARD AND EXECUTION OF CONTRACT

Article 1.03.02 - Award and Execution of Contract:

After the second sentence of the only paragraph add the following:

The successful bidder is hereby notified of the Department's intent to award this contract within 39 days of the bid opening.

Article 1.03.08 - Notice to Proceed and Commencement of Work:

Change the first paragraph to read as follows:

The Contractor shall commence and proceed with the Contract work on the date specified in a written Notice to Proceed issued by the Engineer to the Contractor. The date specified will be no later than 45 calendar days after the date of the execution of the Contract by the Department, however, the contractor is hereby put on notice that it is the Department's intent to issue the Notice to Proceed no later than 31 calendar days after the date of the execution of the Contract by the Department.

October 28, 2015
FEDERAL AID PROJECT NO. N/A
STATE PROJECT NO. 0171-0397

The Rehabilitation of the Salt Sheds

Towns of Bolton, East Windsor, Middletown, and Wolcott
Federal Aid Project No.N/A

The State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges and Incidental Construction, Form 816, 2004, as revised by the Supplemental Specifications dated July 2015 (otherwise referred to collectively as "ConnDOT Form 816") is hereby made part of this contract, as modified by the Special Provisions contained herein. . The State of Connecticut Department of Transportation's "Construction Contract Bidding and Award Manual" ("Manual"), May 14, 2010 edition or latest issue, is hereby made part of this contract. If the provisions of this Manual conflict with provisions of other Department documents (not including statutes or regulations), the provisions of the Manual will govern. The Manual is available upon request from the Transportation Manager of Contracts. The Special Provisions relate in particular to The Rehabilitation of the Salt Sheds in the Towns of Bolton, East Windsor, Middletown, and Wolcott.

CONTRACT TIME AND LIQUIDATED DAMAGES

In order to minimize the hazard, cost and inconvenience to the daily operations of the maintenance facilities, it is necessary to limit the time of construction work, which interferes with traffic as specified in Article 1.08.04 of the Special Provisions.

There will be two assessments for liquidated damages and they will be addressed in the following manner:

1. For this contract, an assessment per day for liquidated damages, at a rate of Seven Hundred Fifty Dollars ($750.00) Dollars per day shall be applied to each calendar day the work runs in excess of the Two hundred seventy-two (272) allowed calendar days for the contract.

2. For this contract, an assessment per day for liquidated damages shall be applied to each day in which the Contractor fails to complete all work on the site(s) that work has been performed as specified in Section 1.20, Article 1.08.03, 5. Project Phasing,of the Special Provisions. The liquidated damages shall be at a rate of Two Hundred ($200.00) dollars for each day per site, in which the Contractor interferes with normal maintenance operations after September 30, 2016.

SECTION 1.20 – GENERAL CLAUSES FOR FACILITIES CONSTRUCTION

1.20-1.00 – General:

Delete the second sentence in the first paragraph and replace with the following:

"The Department has determined that this Project is Facilities Construction and therefore Section 1.20 applies."

1.20-1.01.01--Definitions:

"EQUAL: A material, device, type of equipment, or method other than what is specified in the Contract, which is a recognized equivalent in substance and function for that specified thing, taking into account warranty, performance, weight, size, visual effect, specific features and requirements indicated, quality, workmanship, economy of operation, durability, and suitability for purposes intended provided that the proposed equivalent would not constitute a change in Contract work."

Delete Article 1.20-1.05.02 and replace it with the following:

"1.20-1.05.02—Plans and Contractor Submittals:

1. Plans: The plans prepared by the Department show the details necessary to give a comprehensive idea of the construction contemplated under the Contract. The plans will generally show location, character, dimensions, and details necessary to complete the Project. If the plans do not show complete details, they will show the necessary dimensions and details, which when used along with the other Contract documents, will enable the Contractor to prepare submittals necessary to complete the Project.

2. Transmittal of Submittals: The Contractor shall package and transmit each submittal to the submittal reviewer identified elsewhere in the Contract. The submittal reviewer will not act on submittals received from sources other than the Contractor. Any such submittal shall begin with a cover document which sets forth at least the identity of the Contractor, its telephone number and other contact information, the subject, project number, and the purpose of the submittal. All facsimiles or other electronic documents from the Contractor shall be followed by an official transmittal.

On the transmittal form, the Contractor shall record relevant information and requests for data and shall certify that the provided information complies with Contract requirements.

The Contractor shall number each submittal consecutively: When resubmitting a "Revise and Resubmit" or "Rejected" submittal, the Contractor shall label the transmittal with the original submittal number followed by a letter to designate the additional submission. All submittals shall be numbered conforming to the following examples:

A	B	C	D	E
001	075110	2.6B	Substrate joint tape	New
002	0210040A		Manhole	New
003	Sheet S2	4:S-6	Foundation detail	New
001a	075110	2.6B	Substrate Joint tape	Resubmittal
002a	0210040A		Manhole	Additional Information
001b	075110	2.6B	Joint tape	Resubmittal

A. Being the chronological identification number assigned to the submittal package
B. Being the Special Provision or plan sheet number the item submitted is found under
C. Being the part number and paragraph or the detail number
D. Being the item description
E. Being the status of the submittal

3. Submittal Preparation and Processing: The Contractor shall:

(a) Coordinate preparation and processing of submittals with performance of construction activities;
(b) Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay;
(c) Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity;
(d) Coordinate transmittal of different types of submittals for related elements of the Project so that processing will not be delayed by the Designer's need to review submittals concurrently. The Department reserves the right to return partial submittals unreviewed to the Contractor.

The Contractor shall allow at least 21 calendar days for initial submittal review by the submittal reviewer, and allow additional time for such review if processing must be delayed to permit coordination with subsequent submittals. If a re-submittal is necessary, the Contractor shall allow at least 21 additional calendar days for processing each re-submittal. The submittal reviewer reserves the right to withhold action on a submittal if coordination with other submittals is necessary, until all related submittals are received. The submittal reviewer will promptly inform the Contractor when a submittal being processed must be delayed for such coordination.

The Contractor shall allow at least 60 calendar days for review of any submittal requiring approval by FAA, FTA, any railroad, DEEP, U.S. Coast Guard, Army Corps of Engineers, FM Global, or any other outside agency.

The Engineer will not authorize an extension of Contract time because of the Contractor's failure to transmit submittals to the submittal reviewer or outside agencies sufficiently in advance of the work to permit processing.

The Contractor shall be limited to one acceptable submittal per product. Once a product has been accepted either as originally specified, or as an "Or Equal" to the product specified, the Contractor may elect to submit a subsequent product for consideration, but the Contractor shall be required to reimburse the Department for all costs associated with reviewing the subsequent request.

The Contractor shall place a permanent label or title block on each submittal and shall provide a space approximately 4 inches x 5 inches (100 millimeters x 125 millimeters) on the label or beside the title block for the submittal reviewer's markings and notes of actions taken. The Contractor shall include the following information in said space: State project number, date of review by Contractor, name and address of Contractor, name and address of subcontractor/supplier, name of manufacturer, number and title of applicable Contract provisions, and detail references.

Prior to each submission, the Contractor shall carefully review and coordinate all aspects of each item being submitted and verify that each item, and the submittal for it, conforms in all respects with the requirements of the Contract. By affixing its signature to each submittal, the Contractor is certifying that it has carried out these tasks.

4. Submittal Schedule: At the Pre-Construction Meeting, the Contractor shall submit the initial submittal schedule. The initial submittal schedule will include all submittals required during the first 60 calendar days of construction, all submittals required to maintain orderly progress of the Work, and all submittal required early because of long lead time for manufacture or fabrication. Following the Engineer's response to the initial submittal, the Contractor shall provide copies of the schedule to the Engineer, Designer, the Contractor's subcontractors, and other parties required to comply with submittal dates indicated.

The Contractor shall submit the complete submittal schedule within 60 calendar days of the Notice to Proceed.

The Contractor shall update its submittal schedule once a month and distribute and post each updated schedule in the manner described above.

The submittal schedule shall be organized in numerical order by special provision number and by CSI-formatted specification section number. The Contractor shall include (1) time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates; and (2) additional time required for making corrections or revisions to submittals noted by Designer or Engineer and additional time for handling and reviewing submittals required by those corrections. The Contractor shall coordinate submittal schedule with its subcontracts, the schedule of values, and their construction schedule.

5. Shop Drawings: When required by the Contract, or when ordered to do so by the Engineer, the Contractor shall prepare and submit shop drawings for review.

Drawings shall be submitted on 22 in x 34 in (559 mm x 864 mm) sheets with an appropriate

border and with a title block in the lower right-hand corner of each sheet. Procedures and other supporting data may be submitted in an 8-1/2 in x 11 in (216 mm x 279 mm) sheets.

Shop Drawings consist of fabrication and installation drawings, roughing-in and setting drawings, schedules, patterns, templates and similar drawings, and wiring diagrams showing field-installed wiring, including power, signal, and control wiring. Standard information prepared without specific reference to the Project shall not be considered to be a Shop Drawing. Shop Drawings shall be project specific.

Shop drawings shall include the following information: Contract number, Project description, number and title of the drawing, date of drawing, revision number, name of Contractor and subcontractor submitting drawings, dimensions, identification of products, shop work manufacturing instructions, design calculations, statement of compliance with Contractual standards, notation of dimensions established by field measurement, notation of coordination requirements, relationship to adjoining construction clearly indicated, seal and signature of a professional engineer if specified, and any other information required by individual Contract provisions.

There will be no direct payment for furnishing any shop drawings, procedures or supporting calculations, but the cost thereof shall be considered as included in the general cost of the work.

6. Coordination Drawings: When required by the Contract, or when ordered to do so by the Engineer, the Contractor shall prepare and submit coordination drawings for review.

The Contractor shall prepare coordination drawings according to requirements in other Contract provisions, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

Coordination Drawings shall include Project-specific information drawn accurately to a scale large enough to indicate and resolve conflicts. Coordination Drawings shall not be based on standard printed data. Coordination Drawings shall include the following information, as applicable: (1) use applicable plans as a basis for preparation of Coordination Drawings and prepare sections, elevations, and details as needed to describe relationship of various systems and components; (2) coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review; (3) indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems; (4) indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation; (5) show location and size of access doors required for access to concealed dampers, valves, and other controls; (6) indicate required installation sequences; (7) indicate dimensions shown on the plans, specifically noting dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements, and (8) provide alternate sketches to the Designer indicating proposed resolution of such conflicts.

There will be no direct payment for furnishing any coordination drawings, but the cost thereof shall be considered as included in the general cost of the work.

7. Product Data: When required by the Contract, or when ordered to do so by the Engineer, the Contractor shall prepare and submit product data for review.

The Contractor shall provide all product data in a single submittal for each element of construction or system and shall mark each submittal with the Contract item number.

The Contractor shall mark each copy of a product data submittal to show applicable choices and options. Where product data includes information on several products that are not required, copies shall be marked to indicate the applicable information. Product data shall include the following information and confirmations to the extent applicable: manufacturer's printed recommendations, compliance with recognized trade association standards, compliance with recognized testing agency standards, application of testing agency labels and seals, notation of coordination requirements, and any other information required by the individual Contract provisions.

There will be no direct payment for furnishing any product data, but the cost thereof shall be considered as included in the general cost of the work.

8. Product Samples: When required by the Contract, or when ordered to do so by the Engineer, the Contractor shall prepare and submit product samples for review.

Product Samples are samples submitted for review and action by the Designer, which are: (1) physically identical to the proposed product or material cured and finished as required by the Contract; or (2) submitted for review of kind, color, pattern, thickness, and texture. Samples shall be used for a final check of these characteristics with other elements, and for a comparison of the characteristics of the approved sample with those of the actual component as delivered and installed.

The following information shall be submitted with product samples to the extent applicable: Contract number; Project description; generic description of the sample (name or trade reference, type or quality or grade, and any further designation necessary to identify the items or materials); sample source; product name; manufacturer's name; confirmation of availability; and anticipated delivery time.

The Designer will retain one set of the samples, transmit one set of same to the Engineer, and transmit the remaining sets of samples to the Contractor. The Engineer will retain the samples at the Project site for quality comparisons throughout the duration of the Project.

There will be no direct payment for furnishing any product samples, but the cost thereof shall be considered as included in the general cost of the work.

9. Quality Assurance Submittals: When required by the Contract, or when ordered to do so by the Engineer, the Contractor shall prepare and submit quality assurance submittals for review.

Quality assurance submittals consist of qualification data, design data, certifications, manufacturer's instructions, manufacturer's field reports, test reports, Material Safety Data Sheets (MSDSs), and other quality assurance information required by individual Contract provisions.

Where Contract provisions require certification that a product, material, or installation complies with specified requirements, the Contractor shall submit a notarized certification from the manufacturer certifying said compliance. An officer of the manufacturer or other individual authorized to sign documents on behalf of the company shall sign the certification.

Where Contract provisions require the Contractor shall provide a certification letter on the manufacturer's letterhead to certify that asbestos is not contained in the materials. The manufacturer certification letter shall be formatted in the following manner:

[Addressed to:] Commissioner of Transportation
Department of Transportation
P.O. Box 317546
Newington, Connecticut 06131-7546

Project Title and Number

[We] hereby certify that all materials manufactured by [Insert Manufacturer Name] are asbestos-free.

[Signature:] [Name of authorized signatory]
[Title]

Submittals associated with these materials will not be reviewed without the required manufacturer certification letter.

There will be no direct payment for furnishing any quality assurance submittals, but the cost thereof shall be considered as included in the general cost of the work.

10. Submittal Reviewer's Action: The Designer or Engineer will review each submittal, mark each with a uniform, self-explanatory action stamp, and return the stamped submittal promptly to the Contractor. The Contractor shall not proceed with the part of the Project covered by the submittal until the submittal is marked "No Exceptions Noted" or "Exceptions as Noted" by the Designer or the Engineer. The Contractor shall retain sole responsibility for compliance with all Contract requirements. The stamp will be marked as follows to indicate the action taken:

(a) If submittals are marked "No Exceptions Noted," the Designer or Engineer has not observed any statement or feature that appears to deviate from the Contract requirements. This disposition is contingent on being able to execute the manufacturer's written warranty in compliance with the Contract provisions.

(b) If submittals are marked "Exceptions as Noted," the considerations or changes noted by the Designer or Engineer are necessary in order for the submittal to comply with Contract

requirements. This disposition is contingent on being able to execute the manufacturer's written warranty in compliance with the Contract provisions.

(c) If submittals are marked "Revise and Resubmit," the Contractor shall revise and resubmit the submittal to address the deficiencies or provide additional information requested by the Designer or Engineer.

(d) If submittals are marked "Rejected," the Contractor shall prepare and submit a new submittal in accordance with the Designer's or Engineer's notations.

(e) If submittals are primarily for information or record purposes, the Designer will return the submittal marked "No Action Required." This disposition is contingent on being able to execute the manufacturer's written warranty in compliance with the Contract provisions."

1.20-1.05.05—Cooperation by Contractor:

Add the following after the last paragraph:

"The Contractor shall maintain one binder of all miscellaneous records such as manufacturer startup test reports and inspections by authorities having jurisdiction required by other Contract Provisions (including CSI-formatted Specifications within a particular Special Provision). The miscellaneous records shall be arranged systematically according to the organization of the Contract provisions.

The Contractor shall complete and sign a certification letter assuring the Department that no asbestos-containing materials have been used in the construction of the Project. The Department will not issue the Certificate of Compliance without this completed and signed certification form. The Contractor certification letter shall be formatted in the following manner:

CONTRACTOR CERTIFICATION:
RE/ASBESTOS CONTENT OF MATERIALS

State of Connecticut
Department of Transportation
PO Box 317546
Newington, CT 06131-7546

1. Project Number: _____

2. Project Name: _____

3. Contractor Name: _____

4. This is to certify that I fully understand that it is the requirement of the Connecticut Department of Transportation that only materials that do not contain asbestos of any kind or amount are to be utilized in the construction of this Project.

   I therefore certify that, to the best of my knowledge, all materials installed under this Contract are asbestos-free.

   For the one-year warranty period after the issuance of the Certificate of Compliance, I agree to remove any asbestos-containing material identified by the Connecticut Department of Transportation and reinstall an approved, non-asbestos-containing material that is in compliance with the original Contract at no additional cost to the State.

5. Date of Certificate of Compliance: _____

6. Date of the Asbestos Certification: _____

7. Signature of Authorized Party Agreeing to the Terms & Conditions Identified Herein & as Further Stated in the Contract:

_____	_____
Signature	Title
_____	_____
Printed Name	Date”

1.20-1.05.07—Coordination with Work by Other Parties:

"The Engineer and the Department personnel will occupy the Project Site during the entire construction period.

The Engineer reserves the right to occupy and to place and install equipment in completed areas of the Facility, prior to Final Inspection and the issuance of the Certificate of Compliance provided that such occupancy does not interfere with completion of the Project. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Project. The Contractor shall allow and cooperate with such occupancy at no additional cost to the State.

1. The Engineer shall obtain from the Contractor written approval of such occupancy. The Engineer shall determine whether such occupancy or use is possible and, if so, will make arrangements for holding a job inspection with representatives of the Department and the Contractor.
2. Based on the inspection, a "Punch List" of outstanding or unacceptable work shall be developed.
3. The Contractor shall prepare a letter to the Engineer granting occupancy. The letter granting such occupancy shall state the terms and conditions of occupancy and include the status of completion of "Punch List" items.
4. Subsequent to the receipt of the letter granting occupancy, the Engineer shall notify the Contractor in writing that fire insurance coverage has been requested, and the effective date the Contractor may cancel the fire insurance coverage normally carried on the building by it.
5. Prior to partial Engineer occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy the Engineer will provide operation and maintenance of mechanical and electrical systems in occupied portions of the building."

1.20-1.05.10—Inspection:

Revise the first sentence of the first paragraph to read:

"For work requiring inspection by a building or fire code official, the Contractor shall:"

1.20-1.05.11—Removal of Defective or Unauthorized Work:

"The Contractor shall remove all materials that have a probability of containing asbestos if they failed to provide the manufacturer certification letter required by Article 1.20-1.05.02 unless a manufacturer certification letter is provided and is acceptable to the Designer.

The Contractor shall remove all asbestos containing material that is found to have been installed.

The Contractor shall replace the removed material with appropriate material. The Contractor shall pay for any asbestos testing charges the Department incurred in order to prove that the

material contains asbestos fibers. This obligation will extend throughout the one year warranty period after the issuance of the Certificate of Compliance."

1.20-1.05.24—Project Meetings:

Add the following:

"5. Project Closeout Meeting: The Engineer will conduct a Project closeout meeting no later than 90 days prior to the anticipated expiration of Contract time to review the requirements and responsibilities related to Project closeout.

The Engineer, Designer, Owner, the Contractor and its project coordinator or superintendent, major subcontractors, and other concerned parties shall attend the meeting. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

The meeting participants shall discuss items of significance that could affect or delay Project closeout, including the following: (1) preparation of record documents; (2) procedures required prior to inspection for Substantial Completion and for final inspection for acceptance; (3) submittal of written warranties; (4) requirements for preparing operations and maintenance data; (5) requirements for delivery of spare parts; (6) requirements for demonstration and training; (7) submittal procedures; (8) coordination of separate contracts or work to be performed by others; (9) Owner's partial occupancy requirements; (10) installation of Owner's furniture, fixtures, and equipment; and (11) responsibility for removing temporary facilities and controls.

The Engineer will record meeting results and distribute copies to everyone in attendance, the Designer, and to the Contractor to be distributed to others affected by decisions or actions resulting from the meeting."

1.20-1.06.03—Storage:

Add the following as a new second paragraph:

"Off-site staging and storage of materials and equipment may be required due to restrictive Project Limits and other operational constraints. Arrangement for off-site staging and storage of materials and equipment shall be the responsibility of the Contractor. Payment for off-site staging and storage of materials and equipment shall be in accordance with Article 1.09.06."

1.20-1.06.25—Product Selection:

Add the following as the last sentence of the first paragraph:

"Descriptive, performance, and reference standard requirements in the Contract provisions establish salient characteristics of products."

Replace (g) with the following:

"(g) Visual Selection: When a Contractual product requirement includes the phrase "...as selected by the Designer from manufacturer's full range ..." or a similar phrase, the Contractor shall select a product line that complies with Contract requirements. The Designer will select the color, gloss, pattern, density, or and texture from the product line that includes both standard and premium items. Bids will be based on premium items."

Add (h) after (g):

"(h) Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers."

1.20-1.07.02—Permits and Licenses:

"The Contractor will not be required to apply for a Building Permit from the local Building Official since the state will issue a Notice of Intent to Construct (NOIC) as the Building Permit.

The Contractor shall apply for and obtain a demolition permit from the municipality for each building to be demolished prior to initiating any demolition activities in accordance with CGS 29-401 through 29-415. Said statutes permit a waiting period from the demolition permit application to approval of not more than 90 days so the Contractor shall schedule its work accordingly.

The Contractor shall apply for and obtain the necessary permits related to the installation of wells and septic systems."

1.20-1.08.01--Transfer of Work or Contract:

In the first sentence of the first paragraph of 1.08.01 which reads: "The Contractor shall perform . . . total Contract value.", replace "50%" with "25%."

1.20-1.08.02—Establishment of Construction Field Office:

"The Contractor shall purchase one set of all building and fire codes listed in Article 1.20-1.02.13 for the Engineer's use. If any codes are not readily available, the Contractor shall provide the Engineer with a copy of the code order form along with an anticipated delivery date. At the end of the Project, the codes will remain the property of the Engineer."

1.20-1.08.03—Prosecution of Work:

"**5. Project Phasing:** The order of work shall be completed as follows:
1-East Windsor, 2-Wolcott, 3-Bolton, 4-Middletown.

The Contractor shall complete all project work, including acceptance by the Engineer, at the East Windsor location prior to September 30, 2016. If the Contractor chooses to begin work at any of the remaining locations prior to this time, all project work must be completed at those locations, including acceptance by the Engineer, before September 30, 2016. Commencement of the work on the remaining locations shall resume on April 1, 2017.

1.20-1.08.04—Limitation of Operations:

The Contractor shall repair at its own expense any and all damage caused by construction operations to existing buildings unless said damage is scheduled as part of the Project work. The Contractor shall take all precautions necessary to protect the buildings during the construction period.

The Contractor is hereby advised that the Department will empty the salt sheds of all sand/salt after the 2015-2016 Winter Storm Season. The Contractor will have access to the inside of the salt sheds from the "Notice to Proceed" until September 30, 2016 to perform all Contract work that must be performed from the inside. On October 1, 2016 the Department may begin to fill the salt sheds in anticipation of the 2016-2017 Winter Storm Season.

The Contractor shall bid the Project accordingly.

1.20-1.08.05--Workmen and Equipment:

Add the following after (b):

"(c) The Contractor shall install a filter with a minimum MERV rating of 10 at each return air grille in the permanent HVAC system if the Engineer authorizes the use of the permanent HVAC system for temporary use during construction. The Contractor shall remove the filters prior to the Semi-Final Inspection."

Delete Article 1.20-1.08.12 and replace with the following:

"1.20-1.08.12--Semi-Final, Substantial Completion, and Final Inspections:

1. Semi-Final Inspection: If the Contractor has installed the permanent electrical service and completed all physical work, a Semi-Final Inspection will be scheduled as soon as practical <u>after</u> the Contractor submits the following: (1) Record Drawings, Record Specifications, miscellaneous records, and Contractor Asbestos Certification Letter as referenced in Article 1.20-1.05.05; (2) final survey; (3) preliminary test/adjust/balance records including the air and water balance report; (4) one draft copy of all Operation and Maintenance Manuals as referenced in Article 1.20-1.08.14; (5) a list of all required training along with the entities who will provide the training and estimated time frames for each session; (6) a list of all spare parts and salvage materials to be turned over to the Owner, and (7) account numbers and copies of latest bills from each utility.

The Engineer, Designer, Building and Fire Code Officials, and the Owner will conduct an inspection to prepare a "Punch List" of unfulfilled, substandard, or incomplete items. During this inspection, the Contractor shall have all technicians necessary to demonstrate the complete operation of all systems on site. Examples of such systems include, but are not limited to, the following: boiler, HVAC, fire alarm, and building automation. Results of the completed inspection will form the basis of requirements for the Substantial Completion Inspection. The Engineer reserves the right to issue the C.O.C. after the Semi-Final Inspection if the requirements of the Substantial Completion Inspection are met and there are no Building Code or Fire Code compliance issues or any major "Punch List" items that would adversely affect the tenants of the facility after moving in. The Engineer will advise the Contractor of the construction that shall be completed before the issuance of the C.O.C.

2. Substantial Completion Inspection: Before requesting a Substantial Completion Inspection for the issuance of the C.O.C, the Contractor shall complete all items listed on the Engineer's Semi-Final Inspection "Punch List." If the Engineer determines that the "Punch List" is complete, a Substantial Completion Inspection will be scheduled as soon as practical after the Contractor submits the following: (1) final test/adjust/balance records including the air and water balance report; (2) final copies of Operation and Maintenance Manuals as referenced in Article 1.20-1.08.14; (3) executed warranties as referenced in Article 1.20-1.06.08; (4) maintenance service agreements; (5) final construction photographs; (6) final meter readings for all utilities; and the Contractor (1) completes final cleaning requirements and touch up painting; (2) delivers all spare parts and salvage materials to the Engineer; and (3) completes all training of the Owner's personnel. The Engineer and code officials will conduct the inspection. During this inspection, the Contractor shall have all technicians necessary to demonstrate the complete operation of all systems on-site if requested by the Engineer. The Engineer will advise the Contractor of the construction that is required to be completed.

3. Final Completion Inspection: The Engineer will schedule a Final Completion Inspection one year after the issuance of the C.O.C. for "Relief of Responsibility," notwithstanding any warranty obligations, only after the Engineer determines that the Contractor has satisfactorily: (1) completed follow up door hardware adjusting; (2) completed subsequent season air and water balancing; (3) resolved warrantee issues; (4) completed miscellaneous follow up testing; and (5) completed landscaping requirements.

1.20-1.08.14--Acceptance of Project:

Under subsection 2. Operation and Maintenance Manuals add the following as (j):

"(j) Provide estimated life cycle costs to maintain each product included in the manual to reach maximum useful life (i.e. annual, mid-life overhaul, end of life overhaul, or programmed interval replacement)."

Delete subsection 3. Training and replace with the following:

"**3. Training:** The Contractor shall use experienced instructors thoroughly trained and

experienced in operation and maintenance of Project equipment and systems, in order to instruct the Owner's operation and maintenance personnel.

The Contractor shall develop a training schedule for approval by the Engineer, the Owner, and the Commissioning Authority when applicable that is coordinated with the Owner's operations and working hours. This schedule shall be submitted a minimum of 30 calendar days in advance of the start of training.

The Contractor shall (1) arrange for each installer of equipment that requires regular maintenance to meet with the Owner in order to provide instruction in the proper operation and maintenance of any equipment that requires regular maintenance, (2) provide instruction by manufacturer's representatives if installers are not experienced in any relevant procedures, (3) provide instruction at agreed-upon times, and (4) provide Engineer with a minimum of 72 hours advance notice of the training sessions.

The Contractor shall provide a syllabus prior to the training to ensure that the appropriate Owner's operation and maintenance personnel are in attendance.

The Contractor shall submit to the Engineer for approval, a qualified commercial videographer to videotape the training sessions. The videographer shall be a firm or an individual of established reputation that has been regularly engaged as a professional videographer for not less than 3 years.

The Contractor shall video record each training session and provide said video in DVD format to the Engineer for the Owner's future use. Two DVD's of all training sessions shall be turned over to the Owner through the Engineer. The videographer shall transfer copyright usage rights to the Owner for unlimited reproduction."

1.20-1.09.00—Unit Price Items, Lump Sum Items, Major Lump Sum Items:

"Facilities Construction projects are bid with both lump sum and unit price items which are in addition to the Major Lump Sum Item (MLSI) of the Project. These separate items will be measured for payment on a unit price or lump sum basis (whichever is applicable) for which a separate bid price is required, at the quantities indicated in the Bid Proposal Form. Each item to be measured is more specifically described in a corresponding Standard Specification or a special provision.

Standard Items are referenced by their item numbers; refer to the applicable article for the requirements for this item. Special provisions are referenced by their item number followed by an "A" suffix; refer to the special provisions for requirements for this item.

All work depicted on the Contract Plans and described in the Contract Specifications, including mobilization and project closeout, is included in the MLSI of the Project, with the exception of the unit price or other lump sum items listed in the Bid Proposal Form. Any work incidental to

an item which is not specifically described or included in the item, but which is required for performance and completion of the work required under the Contract, is included in the MLSI."

ITEM #0020765A – GUANO ABATEMENT

Description:

Work under this item shall include the abatement of accumulations of pigeon, bat, bird or other rodent/animal guano and associated work by persons who are knowledgeable, qualified, and trained in the abatement of guano and the subsequent cleaning of the affected environment.

These Specifications govern all work activities that disturb guano. All activities shall be performed in accordance with, but not limited to, the current revision of the OSHA General Duty Clause 29 CFR 1910 Section 5(a)(1), OSHA Respiratory Protection Standard 29 CFR 1910.134, OSHA Construction Standards 29 CFR 1926 and applicable Industry Standards and Guidelines on Guano/Microbial Remediation, such as; ACGIH *Bioaerosols: Assessment and Control*, OSHA SHIB 03-10-10 *A Brief Guide to Mold in the Work Place*, and NIOSH Publication 97-146 *Histoplasmosis: Protecting Workers at Risk.*

The guano abatement work shall include the removal and disposal of all guano accumulations as identified on the Contract Plans and Specifications or as directed by the Engineer.

Deviations from these Specifications require the written approval of the Engineer.

Materials:

All materials shall be delivered to the job site in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name and product technical description.

No damaged or deteriorating materials shall be used. If material becomes contaminated with guano, the material shall be decontaminated or disposed of as guano waste material. The cost to decontaminate and dispose of this material shall be at the expense of the Contractor.

Fire retardant polyethylene sheet shall be in roll size to minimize the frequency of joints, with factory label indicating four (4) or six (6) mil thickness.

Six (6) mil polyethylene disposable bags.

Tape (or equivalent) capable of sealing joints in adjacent polyethylene sheets and for the attachment of polyethylene sheets to finished or unfinished surfaces must be capable of adhering under both dry and wet conditions.

Cleaning detergents, both non-toxic and biodegradable.

Spray equipment must be capable of mixing necessary chemical agents with water, generating sufficient pressure and volume; and equipped with adequate hose length to access all necessary work areas.

Sanders, grinders, wire brushes and needle-gun type removal equipment shall be equipped with a High Efficiency Particulate Air (HEPA) filtered vacuum dust collection system.

Containers for storage, transportation and disposal of guano waste material shall be impermeable and both air and watertight.

Any planking, bracing, shoring, barricades and/or temporary sheet piling, necessary to appropriately perform work activities shall conform to all applicable federal, state and local regulations.

Air filtration devices and vacuum units shall be equipped with HEPA filters.

Construction Methods:

(1) Pre-Abatement Submittals and Notices

(a) Fifteen (15) working days prior to the commencement of guano abatement work, the Contractor shall submit to the Engineer for review and acceptance and/or acknowledgment of the following:

1. Documentation dated within the previous twelve (12) months, certifying that all employees have received hazard communication training and understand the use and limits of respiratory equipment to be used; on an initial and annual basis.

2. Documentation dated within the previous twelve (12) months, from a physician certifying that all employees who may be exposed to airborne guano and mold spores in excess of background level have been provided with an opportunity to be medically monitored to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health affects. Employees shall also be informed of the specific types of respirators they shall be required to wear and the work he/she will be required to perform as well as special workplace conditions such as high temperature, high humidity and chemical contaminants to which he/she may be exposed.

3. Documentation dated within the previous twelve (12) months, of respiratory fit testing for all employees who must don a tight-fitting face piece respirator in order to perform guano abatement activities. This fit testing shall be in accordance with qualitative procedures as detailed in 29 CFR 1910.134.

4. Project time schedule for each phase of work.

5. Name and qualifications of the OSHA Competent Person for the guano abatement activities, shall have a minimum of three years working experience as an environmental abatement site supervisor, shall be capable of identifying existing

hazards and shall have the authority to implement corrective measures to eliminate such hazards. The OSHA Competent Person shall be on-site at all times guano cleaning is occurring, shall comply with applicable Federal, State and Local regulations which mandate work practices, and shall be capable of performing the work of this contract.

(b) No abatement shall commence until a copy of all required submittals have been received and found acceptable to the Engineer. Those employees added to the Contractor's original list will be allowed to perform work only upon submittal to, and receipt of, all required paperwork by the Engineer.

(2) Guano Abatement Provisions:

(a) General Requirements

The Abatement Contractor/Subcontractor shall have an OSHA Competent Person on site and in control on the job site at all times during abatement work.

All labor, materials, tools, equipment, services, testing, insurance (with specific coverage for work on hazardous materials/environmental cleanup), and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations, industry standards and codes, and these Specifications shall be provided by the Contractor. The Contractor shall be prepared to work all shifts and weekends throughout the course of this project as directed by the Engineer.

Prior to beginning work, the Contractor shall perform a visual survey of each work area and review conditions at the site for safety reasons. In addition, the Contractor shall instruct all workers in all aspects of personnel protection, work procedures, emergency evacuation procedures and use of equipment including procedures unique to this project.

The Contractor shall:

Shutdown and isolate heating, cooling, and ventilating air systems to prevent contamination to the other areas of the building.

Shut down and lock out/tag out electrical power, including all receptacles and light fixtures, when feasible. The use or isolation of electrical power will be coordinated with all other ongoing uses of electrical power at the site.

Coordinate all power and fire alarm isolation with the appropriate representatives.

When necessary, provide temporary power and adequate lighting and ensure safe installation of electrical equipment, including ground fault protection and power cables, in compliance with applicable electrical codes and OSHA requirements. The Contractor is responsible for proper connection and installation of electrical wiring.

If sufficient electrical service is unavailable, the Contractor may need to supply electrical power to the site by fuel operated generator(s). Electrical power supply shall be sufficient for all equipment required for this project in operation throughout the duration of the project.

In each interior work area, negative pressure must be continuously maintained until the area achieves satisfactory reoccupancy criteria and is approved by the Project Monitor to be deregulated. If interior work phases cannot be subdivided into manageable work areas that can be completed within one shift, negative air pressure must be maintained twenty-four (24) hours per day and the Contractor shall establish temporary electrical service to the site, rather than utilize generators.

Water service may not be available at the site. Contractor shall supply sufficient water for each shift to operate the decontamination shower units as well as to maintain the work areas adequately wet.

Ladders and/or scaffolds shall be in compliance with OSHA requirements, and of adequate length, strength and sufficient quantity to support the scope of work. Use of ladders/scaffolds shall be in conformance with OSHA 29 CFR 1926 Subpart L and X requirements.

Work performed at heights exceeding six feet (6') shall be performed in accordance with the OSHA Fall Protection Standard 29 CFR 1926 Subpart M including the use of fall arrest systems as applicable.

Any data provided to the Contractor regarding guano identified throughout the structure(s) is for informational purposes only. Under no circumstances shall this information be the sole means used by the Contractor for determining the presence and location of all guano. Prior to commencement of work, the **Contractor shall verify all field conditions and quantities affecting performance/completion of the work** as described in these Specifications in accordance with OSHA, USEPA, USDOT, DEP standards. Compliance with the applicable requirements is solely the responsibility of the Contractor.

The Engineer will provide a Project Monitor to oversee the activities of the Contractor. No abatement work shall be performed until the Project Monitor is on-site. Environmental sampling may be conducted as deemed necessary by the Project Monitor.

Warning signs shall be posted at each entrance to the work area which clearly indicates the area has been regulated as a MICROBIAL REMEDIATION WORK AREA – AUTHORIZED PERSONNEL ONLY.

(b) Worker Decontamination Enclosure System

The Contractor shall establish contiguous to the Regulated Work Area, a Worker Decontamination Enclosure System consisting of Equipment Room and Clean Room in series, as detailed below. Access to the Regulated Area shall only be through this enclosure.

Access between rooms in the Worker Decontamination Enclosure System shall be through airlocks. Other effective designs are permissible. The Clean Room and Equipment Room located within the Worker Decontamination Enclosure, shall be contiguously connected with taped airtight edges, thus ensuring the sole source of airflow originates from outside the regulated areas, once a negative pressure differential within Interior Regulated Areas is established.

The Clean Room shall be adequately sized to accommodate workers and shall be equipped with a suitable number of hooks, lockers, shelves, etc., for workers to store personal articles and clothing. Changing areas of the Clean Room shall be suitably screened from areas occupied by the public.

The Equipment Room shall be of sufficient capacity to accommodate the number of workers. The Equipment Room shall be utilized by personnel to remove protective clothing, decontaminate through the use of HEPA vacuums and a wash facility, and clean off sealed waste containers ready for removal from the work area. No worker or other person shall leave a Regulated Area without decontaminating.

(c) Containment of Interior Work Areas

Pre-clean the work areas using HEPA filtered equipment (vacuum) and/or wet methods as appropriate, collecting and properly containing all dust and debris as guano contaminated waste. Vacuum units, of suitable size and capabilities for the project, shall have HEPA filters capable of trapping and retaining at least 99.97 percent of all monodispersed particles of three micrometers in diameter or larger. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters.

After pre-cleaning, movable objects not designated for relocation by others shall be removed from the work areas with the utmost care to prevent damage of any kind and relocated to a temporary storage location coordinated with the Engineer. The Contractor is responsible for protecting all fixed objects that are permanent fixtures or are too large to remove and remain inside the Regulated Area. Fixed objects shall be enclosed with one layer of six (6) mil polyethylene sheeting sealed with tape.

Engineering controls must be implemented to ensure that debris is not dispersed outside of the work area during cleaning/removal process. Such controls involve source containment, limited critical barriers, full poly containment enclosures and/or negative pressure enclosures, based on the size and magnitude of contamination, as directed by the Engineer, and in accordance with Industry Standards and Guidelines.

Critical barriers consisting of a minimum of one (1) layer of six (6) mil polyethylene sheeting, secured at the edges with duct tape, shall be installed to seal off all windows, doorways, skylights, ducts, grilles, diffusers, vents, light fixtures, suspended ceiling tile systems and any other openings between the Regulated Work Areas and the surrounding uncontaminated areas,

including the outside of the building. Complete isolation of the work area from adjacent areas using a minimum of one (1) layer of six (6) mil polyethylene sheeting to create an enclosure and seal with duct tape. HVAC systems within the work area cannot be operating.

HEPA filtered negative air filtration units will be used with the intake in the general work area and exhaust outdoors during removal/cleaning of large or extensive contamination areas, and/or as directed by the Engineer, so as to provide local exhaust ventilation and create a negative pressure enclosure work area. Negative pressure must be maintained continuously in each work area until the area achieves satisfactory verification criteria and is approved by the Engineer for deregulation. A sufficient number of negative air filtration units shall be utilized in each work area to create a negative pressure differential in the range of 0.02 to 0.04 inches of water column between the Regulated Area and surrounding areas, and allow a sufficient flow of air through the area to provide four (4) air changes per hour. Negative air filtration units shall be equipped with four stages of filtration, with the final stage being High Efficiency Particulate Air (HEPA) filtration, and incorporate an automatic warning system to indicate pressure drop or unit failure. Negative pressure shall be measured in each work area by a recording manometer, during the entire project.

Following construction of the containment work area, the containment shall pass a pre-abatement visual inspection by the Competent Person and the Project Monitor prior to commencement of abatement work.

(d) Alternate work area containment requirements for exterior abatement procedures

In lieu of the establishment of a negative pressure enclosure (NPE) system as described above, soot accumulations will be removed from exterior work areas within an outdoor Regulated Area(s). The regulated work areas will be established by the use of source containment, poly drop cloths.

(e) Personnel Protection

The Contractor shall utilize all appropriate engineering controls and safety and protective equipment while performing the work in accordance with applicable standards and guidelines.

Abatement workers should have received hazard communication awareness training on safe work practices associated with guano/microbial abatement, and health effects of guano/microbial spore exposure, be medically approved to perform such work and have received fit testing for respirator use.

Abatement workers conducting the cleaning/removal and all personnel entering the work areas will be required to wear personal protective equipment including the following minimum. The Contractors Competent Person shall ultimately make the exposure/hazard assessment judgement on whether upgraded PPE is required.

1. Negative Pressure Respirators equipped with N-95 filter cartridges
2. Disposable coveralls with a hood

3. Eye protection
4. Appropriate gloves

Respiratory protection shall be provided and shall meet the requirements of OSHA as required in 29 CFR 1910.134. A formal respiratory protection program must be implemented in accordance with 29 CFR 1910.134. The Contractor shall provide respirators from among those approved as being acceptable for protection by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part ll.

All other necessary personnel protective equipment (i.e. hardhat, work boots, safety glasses, hearing protection, etc.) required to perform the abatement work activities, as deemed necessary by the Competent Person, shall conform to all applicable federal, state and local regulations.

All other qualified and authorized persons entering into a Regulated Area (i.e. Project Monitor, Regulatory Agency Representative) shall adhere to the requirements of personnel protection as stated in this section.

Contractor shall ensure that all workers and authorized persons who enter and leave the work area use a personnel decontamination system.

Contractor shall ensure HEPA filtered local exhaust ventilation is provided in all areas where soot accumulations are to be cleaned/removed to reduce the potential for airborne exposure to spores.

Non-abatement workers shall be kept out of the immediate areas where abatement is ongoing.

(f) Removal and Cleaning Methods

The general cleaning/removal procedures specified herein are to be used as a guideline throughout the project. Deviations from specified methods of removal/cleaning must be approved in writing by the Engineer prior to their implementation.

The following details the extent of each phase of operation designated for this project. Phase areas may be combined or divided at the direction of the Engineer. Proceed through the sequencing of the work phases under the direction of the Engineer.

<u>Bolton, Middletown, Wolcott and East Windsor Salts Sheds</u>

Using trained and appropriately protected staff, remove and dispose of all accumulations of guano, feathers, carcasses, etc. as directed by the Engineer. Clean the areas where removal occurs using biodegradable/non-toxic detergent solutions and HEPA vacuuming. Interior regulated area(s)/NPE shall be established at each work area, and access shall be controlled by the Contractor. Utilize dust suppression methods such as misting (not soaking) materials prior to abatement. Poly drop cloths/critical barriers should be used as appropriate to protect objects in direct proximity to the work areas from contamination,

and prevent the release of contamination/debris to outside areas. After cleaning the area(s) should be left dry and visibly free from contamination and debris. Utilize damp wiping and HEPA filtered vacuuming techniques for final area cleanup. A remote personnel decontamination unit shall also be utilized. Waste generated from the cleaning process should be removed from the work space in sealed plastic bags to prevent dispersal of spores to non-affected building/work spaces and disposed of as general bulky C&D waste debris. Removal shall be undertaken in accordance with Industry Guidelines. Care should be exercised during guano removal/cleaning to not disturb or release any underlying lead paint which may be present. ***Contractor shall be responsible for the erection and safe maintenance of any and all necessary apparatus/equipment to gain access to the work areas and perform the required abatement.***

Contractor shall wet mist all materials/accumulations/surfaces scheduled for removal/cleaning prior to commencing work to minimize airborne dust/spore generation and use damp methods throughout the removal/cleanup process.

Contaminated materials, accumulations and debris that are to be removed must be removed with as little disturbance as possible.

The Contractor shall promptly place the removed material in disposal containers (six (6) mil polyethylene bags, fiber drums, etc.) as it is removed. Large components removed intact may be wrapped in two (2) layers of six (6) mil polyethylene sheeting secured with tape. As the disposal containers are filled, the Contractor shall promptly seal the containers and clean the containers before removal from the work area. Bags shall be securely sealed to prevent accidental opening and leakage by taping in gooseneck fashion. Materials with sharp-edged components (e.g. nails, screws, metal lath, tin sheeting) which could tear polyethylene bags and sheeting shall be placed in clean drums and sealed with locking ring tops. All waste containers shall be leak-tight, (typically consisting of two layers of 6 mil poly (or bags)). Containers shall be decontaminated by wet cleaning and HEPA vacuuming within the decontamination area prior to exiting the regulated area. On site storage of waste containers shall be as dictated and allowed by the Engineer within the extent of construction operations. On site storage of waste containers in public areas, outside of construction containment areas shall not be allowed.

Following material/accumulation removal, Contractor shall thoroughly clean the work area. Cleaning of surfaces and content items, shall utilize wet/damp wiping coupled with a non-toxic, biodegradable detergent wash. Following cleaning, the areas shall be dried and HEPA vacuumed to remove all associated dirt and debris.

The use of biocides, including chlorine bleach, is not recommended during guano/microbial abatement. Biocides are toxic to humans and may cause damage to underlying building substrates. Any use of biocides, fungicides, disinfectants or encapsulants can be done only with the written approval of the Engineer.

After cleaning, the Competent Person and Project Monitor shall perform a post remediation visual inspection of each work area to ensure remediation is complete, that no dust or debris remains on surfaces in the work areas as the result of removal/cleaning operations and the areas have been dried. All surfaces within the Regulated Work Areas, including but not limited to ledges, beams, and hidden locations shall be inspected for visible residue. Evidence of guano/microbial accumulations/contamination and/or debris identified during this inspection will necessitate further cleaning as heretofore specified. The area shall be re-cleaned at the Contractor's expense, until the standard of cleaning is achieved.

If at any time, the Project Monitor should suspect contamination of areas outside the Regulated Area, the Contractor shall immediately stop all abatement work and take steps to decontaminate these areas and eliminate causes of such contamination.

(g) Quality Assurance/Verification

At a minimum, the affected areas shall be free of visible guano accumulations and debris, free of moldy odors and be left dry.

Surface and airborne types and levels of microbial spores may be tested by the Project Monitor upon completion of the cleaning and sanitizing to assure that the affected areas have been returned to a level equivalent to non-affected/ambient areas. Where samples are collected, acceptable results shall be considered levels less than background (interior non-affected and/or ambient) areas for all microbial genera with similar microbial types and rank order and which do not indicate amplification. Any samples collected shall be analyzed at a laboratory accredited by the AIHA EMPAT program. When sampling is performed, it shall be conducted no less than 1 hour after abatement cleanup work has been completed.

The Engineers on-site Project Monitor will verify compliance with these specifications, conduct post-abatement work area inspections and/or collect post abatement samples, photographs, and/or videos of the cleaned surfaces/work areas as deemed necessary.

If any areas fail inspection/testing, the failed area shall be recleaned by the Contractor and retested at no cost to the Engineer.

(h) Post Abatement Work Area Deregulation

The Contractor shall remove all remaining polyethylene, including critical barriers, and Decontamination Enclosure Systems leaving negative air filtration devices in operation as long as feasible. HEPA vacuum and/or wet wipe any visible residue which is uncovered during this process. All waste generated during this disassembly process shall be discarded as abatement waste.

A final visual inspection of the work area shall be conducted by the Competent Person and the Project Monitor to ensure that all visible accumulations of suspect materials have been removed and that no equipment or materials associated with the abatement project remain.

The Contractor shall restore all work areas and auxiliary areas utilized during work to conditions equal to or better than original. Any damage caused during the performance of the work activity shall be repaired by the Contractor at no additional expense to the Engineer.

(i) Waste Disposal

Waste generated from the removal of guano, while an environmental heath hazard, is not classified as a biological waste or hazardous waste. All waste materials generated during abatement shall be disposed of as bulky C&D waste in accordance with CTDEP Solid Waste Management requirements. Contractor shall supply to the Engineer completed shipping papers for each load of waste transported for disposal, indicating the solid waste landfill name and location and quantity of waste disposed of.

(3) Project Closeout Data:

The Contractors site supervisor shall keep a logbook to document daily site activity. The log book shall document the preparation tasks, schedule, engineering controls utilized, abatement work conducted, daily lists of employees on site, exposure/hazard assessment judgements, negative pressure manometric measurement readings, PPE utilized, waste shipping papers, etc.

The Contractor will submit the original log book and any other related documentation to the Engineer within 30 days of completion of work.

Final payment to the Contractor shall not be approved without submission of the reporting materials.

Method of Measurement:

The quantity of guano abatement shall be the actual number of cubic feet removed for disposal, completed and accepted, within the lines of the work area as shown on the plans or as ordered by the Engineer.

Basis of Payment:

The work will be paid for at the contract unit price per cubic foot for “Guano Abatement”, completed, which price shall include the specialty services of the Guano Removal Contractor including: labor, materials, equipment, insurance, submittals, personal protective equipment, temporary enclosures, apparatus/equipment necessary for work area access, utility costs, incidentals, fees and labor incidental to the removal, transport and disposal of guano, including close out documentation.

Final payment for guano abatement will not be made until all the project closeout data submittals have been completed and provided to the Engineer. Once the completed package has been received in its entirety, the Engineer will make the final payment to the Contractor.

Pay Item	Pay Unit
Guano Abatement	Cubic Feet

SECTION 075419 - POLYVINYL-CHLORIDE (PVC) ROOFING

PART 1 - GENERAL

1.1 SUMMARY:

A. Section Includes:

1. Fully-Adhered polyvinyl-chloride (PVC) “Standing Seam” membrane roofing system.
2. Substrate/roof board.
3. Vapor retarder.
4. Snow guards/retention system.
5. Roof warranty sign.

B. Related Requirements:

1. Section 061053 "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
2. Section 079200 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

1.2 DEFINITIONS:

A. Roofing Terminology: Definitions in ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

B. The PVC “Standing Seam” (Extrusion) membrane roofing system is known for its aesthetically appealing appearance which is essential in this application as the steep sloped roof is visible from the ground. This system shall have the appearance and characteristics (such as flatness) of a standing seam metal roof.

1.3 PREINSTALLATION MEETINGS:

A. Before starting roof replacement, conduct a Preinstallation Meeting at the Project Site in compliance with the requirements of Form 816 Article 1.20-1.05.24 subsection 2.

1. Meet with Owner, Designer, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review flashings, special roofing details, roof drainage (water shield), and condition of other construction that affects roofing system.
7. Review temporary protection requirements for roofing system during and after installation.
8. Review roof observation and repair procedures after roofing installation.

1.4 SUBMITTALS:

A. Submit the following in accordance with Form 816 Article 1.20-1.05.02 and NOTICE TO CONTRACTOR – SUBMITTALS.

B. Product Data: For each type of product.

C. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work, including:

1. Flashings and membrane terminations.
2. Roof plan showing orientation of roof deck and orientation of membrane roofing with PVC Extrusion spacing.
3. Water shield and end cap terminations.
4. Salt shed detail drawing with fastening pattern per manufacturer recommended installation.

D. Samples for Verification: For the following products:

1. Sheet roofing, of color required.
2. Substrate/ roof board.
3. Water shield profile with water shield end cap (1’ long).

E. Manufacturer Certification Letter in accordance with NOTICE TO CONTRACTOR – POTENTIAL FOR ASBESTOS CONTAINING MATERIALS.

F. Qualification Data: For Installer and manufacturer.

G. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in Part 2.2, "Performance Requirements."

1. Submit evidence of compliance with performance requirements.

H. Product Test Reports: For components of roofing system, for tests performed by manufacturer and witnessed by a qualified testing agency.

I. Sample Warranties: For manufacturer's special warranties.

J. Maintenance Data: For roofing system to include in the operation and maintenance manuals specified in Form 816 Article 1.20-1.08.14 subsection 2 and described in NOTICE TO CONTRACTOR – CLOSEOUT DOCUMENTS.

1.5 QUALITY ASSURANCE:

A. Manufacturer Qualifications: A qualified manufacturer that is FM Global approved for roofing system identical to that used for this Project.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.6 DELIVERY, STORAGE, AND HANDLING:

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with roof board manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.7 FIELD CONDITIONS:

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.8 WARRANTY:

A. Refer to Form 816 Article 1.20-1.06.08 and NOTICE TO CONTRACTOR – CLOSEOUT DOCUMENTS for additional information.

B. Roofing Manufacturer's Warranty: Submit a written warranty without monetary limitation (no-dollar-limit), signed by the roofing system manufacturer agreeing to promptly repair leaks resulting from defects in factory materials or site workmanship. Warranty shall cover the entire roofing system and its performance and shall be an all-inclusive "edge-to-edge" warranty, including but not limited to performance of design wind speed included in Part 2.2. All roofing work performed under this Section shall be warranted by the roofing manufacturer for the following warranty period: 20 years from the issuance of the Certificate of Compliance.

C. Special Project Warranty: All roofing work performed under this Section shall be warranted by the Contractor for the following warranty period: 2 years from the issuance of the Certificate of Compliance.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Source Limitations: Obtain components including fasteners for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS:

A. General Performance: Installed roofing and flashings shall withstand specified wind speeds, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and flashings shall remain watertight.

B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.

C. Roofing System Design:

1. Basic Wind Speed: 100 mph (East Windsor, Wolcott), 110 mph (Bolton, Middletown).

D. FM Global Listing: Roofing, flashings, and component materials shall comply with requirements in FM Global 4470, as applicable. Identify materials with FM Global markings.

1. Fire/Windstorm Classification: Class 1A-90.
2. Hail-Resistance Rating: MH.

2.3 PVC MEMBRANE ROOFING:

A. PVC Sheet: ASTM D 4434/D 4434M, Type II, Grade I, glass-fiber reinforced, felt backed.
   1. Basis of Design Product: Subject to compliance with requirements, provide products manufactured by Sarnafil Inc., or an approved equal.
   2. Thickness: 80 mil, minimum.
   3. Exposed Face Color: Lead Grey. Color shall not be limited to manufacturer's standard stock colors.

B. PVC Extrusion: Manufacturer's standard height, base, profile and length.

   1. Basis of Design Product: Subject to compliance with requirements, provide "Décor Profile" by Sarnafil Inc., or an approved equal.
   2. Exposed Face Color: Match PVC Sheet.

C. Refer to Part 3.6 to ensure the proper quantity of PVC Sheet is ordered.

2.4 AUXILIARY ROOFING MATERIALS:

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing.

   1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

B. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as PVC sheet.

C. Water Shield: 20 gauge galvanized metal with heat-weldable 20 mil (0.5mm) PVC membrane bonded on one side. Color to match PVC membrane.

D. Bonding Adhesive: Manufacturer's standard.

E. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roofing to substrate, and acceptable to roofing system manufacturer.

F. Miscellaneous Accessories: Provide sealers and other required accessories.

2.5 SUBSTRATE/ROOF BOARDS:

A. Substrate/Roof Board: ASTM C 1177/C 1177M, gypsum hardboard with glass-mat facers and a pre-primed surface on one side.

1. Basis of Design Product: Subject to compliance with requirements, provide Georgia-Pacific Densdeck Duraguard roof board, 4-ft high by 8-ft long. Smaller sheet size shall not be permitted.
2. Thickness: 1/2" thick.
3. Thickness shall vary based on manufacturers written instructions to meet performance requirements in Part 2.2.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening substrate board to roof deck.

2.6 VAPOR RETARDER:

A. Polyethylene Film: ASTM D 4397, 10 mils thick, minimum

1. Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

2.7 SNOW-GUARDS/RETENTION SYSTEM:

A. Snow Guards, General: Prefabricated, non-corrosive units designed to be installed to PVC sheet roofing, complete with manufacturer-specific anchoring system. Spacing to be determined by manufacturer recommendation.

1. Basis of Design Product: Subject to compliance with requirements, provide two-pipe snow guard products manufactured by Alpine Snow Guard, or an approved equal.
2. Brackets: 6000 Series Aluminum.
3. Base Plate: 304 Stainless Steel.
4. Tubing: 304 Stainless Steel.
5. Coupling: 304 Stainless Steel.
6. End Caps: 304 Stainless Steel.
7. End Collars: 304 Stainless Steel.
8. Ice Flags: 304 Stainless Steel.
9. Fasteners: Provide fasteners to penetrate the roofing assembly.

2.8 ROOF WARRANTY SIGN:

A. Materials: Provide cast (not extruded or continuous cast) methyl methacrylate monomer plastic sheet, in sizes and thickness indicated, with a minimum flexural strength of 16,000 psi when tested according to ASTM D 790, with a minimum allowable continuous service temperature of 176 deg F and of the following general types:

1. Engraved Copy: Engrave copy characters through the first background layer to expose the contrasting color of the inner core of the engraving stock.

a. Panel Size: 18”x20”, long side horizontal.
b. Engraving Stock Thickness: 1/8-inch minimum.
c. Engraved Letter proportion: Letters and Numbers on signs shall have a width-to-height ratio between 3:5 and 1:1 and a stroke-width-to-height ratio between 1:5 and 1:10.
d. Engraved Letter Size: Characters shall be 5/8 inch high.
e. Background or first layer of engraving stock: Black
f. Inner core of engraving stock: White
g. Engraved letter style: Helvetica Medium with all upper case letters.
h. Mounting Methods: Mechanical.

PART 3 - EXECUTION

3.1 EXAMINATION:

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work:

1. Verify that the deck substrate is flat.

2. Verify that wood blocking and nailers are securely anchored to roof deck.

3. Verify that substrate is visibly dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION:

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

3.3 ROOFING INSTALLATION, GENERAL:

A. Install roofing system according to roofing system manufacturer's written instructions.

B. Refer to Part 1.2B. The Designer and the Engineer shall be the final arbiters of all matters related to Contractor’s workmanship as it relates to aesthetic matters. Aesthetic concerns include, but are not limited to, the following: telegraphing of the low profile plates and roof board edges through the membrane, visible bubbles in the membrane, and PVC Extrusions not installed straight. If aesthetic concerns arise, the Engineer will suspend roofing work in accordance with Form 816 Article 1.08.06.

C. Complete terminations and flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.4 SUBSTRATE/ROOF BOARD INSTALLATION:

A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.

1. Fasten substrate board to deck according to recommendations in FM Global Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification.

2. Stagger the installation of the substrate board by ½ sheets over the existing plywood to ensure that the substrate board and plywood seams do not align.

3. Embed the concave portion of the substrate board fastener plate into the substrate board to ensure flatness.

4. Install additional fasteners at perimeter of each substrate board as required by misalignment of adjacent substrate boards.

3.5 VAPOR-RETARDER INSTALLATION:

A. Polyethylene Film: Loosely lay polyethylene-film vapor retarder in a single layer over area to receive vapor retarder, side and end lapping each sheet a minimum of 2 inches (50 mm) and 6 inches (150 mm), respectively. Continuously seal side and end laps with tape.

B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into roofing system.

3.6 FULLY-ADHERED MEMBRANE ROOFING INSTALLATION:

A. Adhere roofing over area to receive roofing according to roofing system manufacturer's written instructions. Unroll roofing and allow to relax before retaining.

1. Install sheet according to ASTM D 5036.

B. Start installation of roofing in presence of roofing system manufacturer's technical personnel.

C. PVC sheets shall be installed continuous with no end joints as shown on the plans.

D. Accurately align roofing, and maintain uniform side and end laps of minimum dimensions required by manufacturer.

E. Bonding Adhesive: Apply according to manufacturer’s recommendations.

F. In addition to adhering, mechanically fasten roofing securely at terminations and perimeter of roofing.

G. Seams: Clean seam areas, overlap roofing, and hot-air weld side and end laps of roofing and sheet flashings according to manufacturer's written instructions, to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet.
2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.

H. In the event of a puncture in the PVC membrane, the Contractor shall install a full-width PVC sheet between the PVC Extrusions continuous for the full length of the roof field.

3.7 FLASHING INSTALLATION:

A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings.

3.8 PVC EXTRUSION INSTALLATION:

A. Install PVC Extrusions according to roofing system manufacturer's written instructions unless otherwise noted.

B. Installation of the PVC Extrusions shall begin at the water shield with full-length strips. This ensures that partial strips, if any, are installed higher on the roof.

C. The PVC Extrusion is installed for aesthetics. Ensure that the PVC Extrusion is installed straight.

3.9 FIELD QUALITY CONTROL:

A. In-Process Roof Inspections: Arrange for roofing system manufacturer’s technical personnel to inspect roofing system while installation is ongoing. Notify Engineer 7 calendar days in advance of date and time of inspections.

B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion. Notify Engineer 7 calendar days in advance of date and time of inspection.

C. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.

D. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.10 PROTECTING AND CLEANING:

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to the Engineer.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of the issuance of the Certificate of Compliance and according to requirements.

C. Clean overspray and spillage using cleaning agents and procedures recommended by manufacturer of affected construction.

3.11 INSTALLATION OF ROOF WARRANTY SIGN:

A. The roof warranty sign shall be permanently anchored to the facility adjacent to the electrical panel, unless otherwise directed by the Engineer. Anchor sign with stainless steel fasteners.

B. Panel sign shall include the following information:

NEW ROOF INSTALLATION WARANTY

CTDOT Project No. 171-397: _____ Salt Shed

WARRANTY START DATE: (X/X/XX)
(Date of the issuance of the Certificate of Compliance)

ROOF TYPE: (Type of roof installed),
(i.e. Sarnafil, Inc., Johns Manville, Carlisle SynTec Inc. PVC Membrane)

WARRANTY: (Manufacturer's name and type of warranty), 20 yr. NDL

WARRANTY NUMBER: (Actual Warranty number)

INSTALLER: (Contractor's name, town located, and telephone number.)

AFTER 2 YEARS CONTACT MANUFACTURER: (Manufacturer's name and telephone number of warranty service)

END OF SECTION 075419